



# STATE OF CALIFORNIA CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION



## FIRE HAZARD SEVERITY ZONES

- Moderate
- High
- Very High
- SRA, no severity assigned

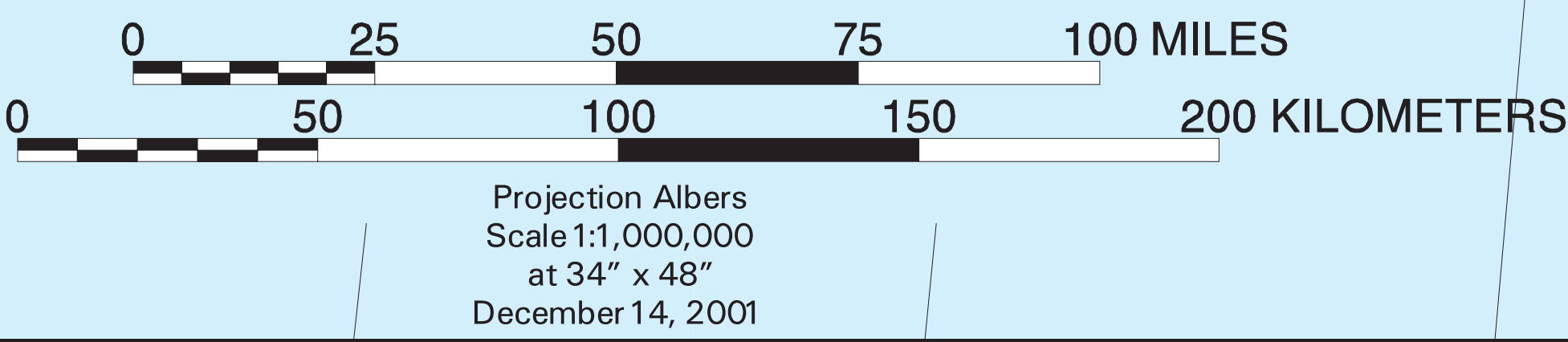
**Background**  
Following the disastrous 1980 fire season, Senator Avila introduced legislation which required the Director of CDF to zone the State Responsibility Area (SRA) lands in accordance with the degree of severity of fire hazard. The purpose of the zoning was for identifying measures to be taken to retard the rate of spreading and to reduce the potential intensity of uncontrolled fires that threaten to destroy resources, life, or property. Each zone was "to embrace relatively homogeneous lands and shall be based on fuel loading, slopes, fire weather, and other relevant factors present" (PRC 4209-4204). The process used by CDF in developing and rating the zones is described in a publication titled "Instructions for Zoning Fire Hazard Severity in State Responsibility Areas in California", by Clinton B. Phillips, dated December 1983. This process was conducted between 1981 and 1985, and the final maps were adopted into regulation as Section 1280 of CCR Title 14 on March 12, 1985. The end result was that each zone received one of three ratings: Moderate, High, or Very High. Copies of the maps were distributed to county planning departments in early 1986, with written receipt of acknowledgment.

**Mapping Procedures**  
The following is a summarization of the main steps used for mapping Fire Hazard Severity Zones (FHSZs).  
1) Selection of long-term planning period: Ranger units were directed to confer with local government planners and building inspectors to determine the time span over which the regulations should remain stable.  
2) Zone delineation: Zones were to be based on areas of similar vegetative type, slope, and weather. Zone boundaries were either identifiable on the ground or well-established, legally surveyed lines. Some ranger units defined zones on non-SRA as well as SRA lands, while others zoned SRA lands only. Zone delineation typically involved drawing boundaries on USGS 7.5-minute quadrangle maps.  
3) Fuel model selection: A representative National Fire Danger Rating System fuel model was assigned to each zone. The long-term planning period is a critical factor, since fuel models can be assigned based on current conditions as determined by recent disturbances (fires, timber harvest) or based on the longer-term average fuel conditions.  
4) Slope class selection: A representative National Fire Danger Rating System slope class was assigned to each zone.  
5) Weather station selection: The CDF weather monitoring station most representative of each zone was selected.  
6) Zone rating assignment: The FIRSAT computer program was used to estimate the number of days in an average year that each zone will experience a Burn Index of 61 or higher, based on the assigned fuel model, slope class, and weather data. Burn Index is a measure of both the rate of spread and energy release based on fuels, slope, and weather. The FIRSAT results are used to assign each zone a rating of Moderate, High, or Very High.  
The first five steps were performed by staff at ranger units. The last step was performed at Sacramento Headquarters.

**Data Capture Procedures**  
The quadrangle sheets were digitized at Desert Vocational Institution (DVI) by inmate labor using Atlas GIS software. There was no effort made to match FHSZ boundaries with digital data sources such as county boundaries, streams, roads, or public land survey section lines. The original quadrangle sheets (over 2,000) are currently stored at DVI. CDF-FRAP has worked to merge ranger unit data into a statewide data set in a format accessible to the GIS community. Since zoning for non-SRA lands was incomplete, it has been removed from the data set.

**Data Limitations**  
FHSZ mapping was basically a CDF field exercise to carry out the above set of procedures. Examination of the data suggests that little effort was made to standardize zoning procedures between ranger units. There are cases where ranger units that might be expected to have similar hazard characteristics appear to be much different in terms of FHSZs. For example, there are ranger units zoned exclusively as Very High while an adjacent unit has a variety of zones of different ratings. There are also cases where ratings change abruptly at ranger unit boundaries. These inconsistencies are a direct result of a lack of procedural standardization, and could be due to different long-term planning periods, different interpretation of fuel models, or the level of detail used to map the various zones.

**Data Usage**  
The gross inconsistencies in the data are obvious from even a cursory examination of the statewide FHSZ map. The fact that there was no effort to standardize the mapping effort or review the data for accuracy suggest that the data be used with extreme caution.  
Finally, the zones are designed to give an average hazard rating for the area. This does not necessarily define the exact conditions for all areas within the zone. Variations in fuels, slope, weather, as well as factors not considered in this exercise such as aspect, elevation, and air stability will influence hazard conditions at actual locations within each zone. For an individual structure, the risk of damage from fire also depends on site-specific factors such as access, water supply, clearance, and characteristics of the structure. Since statewide hazard zoning cannot capture these factors, it should not be used as a measure of the risk faced by individual structures.



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Obtain FRAP maps, data, metadata and publications on the Internet at <http://frap.cdf.ca.gov> or from CDF-FRAP, 1920 20th Street, Sacramento, CA 95814; (916) 227-2651.



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MAP ID: FHSZMAP  
DATA SOURCES  
USGS; 1:100,000 DLGs  
SRA: CDF (1998) FHSZ: CDF (1980s)